

Appl. Ser. No. 09/786,826
Att. Docket No. 02345/146

AMENDMENTS TO THE CLAIMS:

Without prejudice, this listing of the claims replaces all prior versions and listings of the claims in the present application:

LISTING OF CLAIMS:

Claim 15. (Canceled).

16. (Currently Amended) An optical communications link comprising: [[The optical communications link as recited in claim 15,]]

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero,

wherein the optical fiber is bent so that a torsion of the fiber section of the plurality of fiber sections averaged over a total subsections of the communications link is about zero.

Claim 17. (Canceled)

18. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero,

wherein the optical fiber is wound in a helical shape, alternating with a right-hand and left-hand winding helix, wherein the right-hand and left-hand winding helix includes a right-hand helical winding and a left-hand helical winding so that the right-hand helical

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winding follows and alternates with the left-hand helical winding, a right length of the right-hand helical winding corresponding to a left length of the left-hand helical winding.

19. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero, and

an elastic carrier material, the elastic carrier material being joined to the optical fiber so that a form change of a transmission line is permitted and so that in response to no mechanical load the transmission line retains the optical fiber in its initial curved form, the transmission line configured as a plurality of the optical fibers.

Claim 20. (Canceled)

21. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero,

a carrier element, the carrier element being an at least one of an elongated carrier element and a cylinder, the optical fiber being wound around the carrier element,
wherein the at least one of the elongated carrier element and the cylinder is flexible.

22. (Currently Amended) An optical communications link comprising: [(The optical communications link as recited in claim 20,)]

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an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link is about zero; and

a carrier element, the carrier element being an at least one of an elongated carrier element and a cylinder, the optical fiber being wound around the carrier element,

wherein the optical fiber is secured to the carrier element so that the optical fiber is movable and still stabilized on the carrier element.

23. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero,

a carrier element, the carrier element being an at least one of an elongated carrier element and a cylinder, the optical fiber being wound around the carrier element, and

a cladding material, the optical fiber being at least one of flush mounted on the carrier element and embedded between the carrier element and the cladding material,

wherein the optical fiber is secured to the carrier element so that the optical fiber is movable and still stabilized on the carrier element.

24. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communications link so that an average torsion of the optical fiber over the optical communications link is about zero, and

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a carrier element, the carrier element being an at least one of an elongated carrier element and a cylinder, the optical fiber being wound around the carrier element,

wherein the optical fiber is coiled with an alternating winding direction around one of two carrier elements disposed side-by-side and an even number of the carrier elements disposed side-by-side.

25. (Previously Presented) An optical communications link comprising:

an optical fiber for transmitting information, the optical fiber having a plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a right-hand curvature and a left-hand curvature, the optical fiber being bent repeatedly so that the plurality of fiber sections having a right-hand curvature and a left-hand curvature are distributed over the optical communication link so that an average torsion of the optical fiber over the optical communications link is about zero, and

a carrier element, the carrier element being an at least one of an elongated carrier element and a cylinder, the optical fiber being wound around the carrier element,

wherein a left-number of the left-hand windings around a first of the carrier elements is equivalent to a right-number of the right-hand windings around a second of the carrier elements.

26. (Previously Presented) An optical communications link comprising:

a first optical fiber for transmitting information, the first optical fiber having a first plurality of fiber sections, each fiber section of the plurality of fiber sections being configured to have at least one of a first right-hand curvature and a second left-hand curvature, the first optical fiber being bent repeatedly so that the first plurality of fiber sections having a first right-hand curvature and a first left-hand curvature is distributed over the optical communications link so that a first average torsion of the first optical fiber over the optical communications link is about zero;

a second optical fiber for transmitting information, the second optical fiber having a second plurality of fiber sections, each fiber section of the second plurality of fiber sections being configured to have at least one of a second right-hand curvature and a second left-hand curvature, the second optical fiber being bent repeatedly so that the second plurality of fiber

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sections having a second right-hand curvature and a second left-hand curvature are distributed over the optical communications link so that a second average torsion of the second optical fiber over the optical communications link is about zero;

the first and second optical fibers being helically wound and having different winding directions so that the first optical fiber directs light in a forward direction and the second optical fiber directs light in a return direction.

27. (Previously Presented) The optical communications link as recited in claim 26, wherein the first optical fiber and the second optical fiber are wound around the same carrier element producing an outer winding of a larger coil pitch than an inner winding so that a first torsion of a forward line of the first optical fiber is similar in magnitude to a second torsion of a return line of the second optical fiber, the first torsion and the second torsion having different operational signs.

28. (Previously Presented) The optical communications link as recited in claim 26, wherein the optical fiber has a winding radius of one of greater than 2 cm and greater than 3 cm.